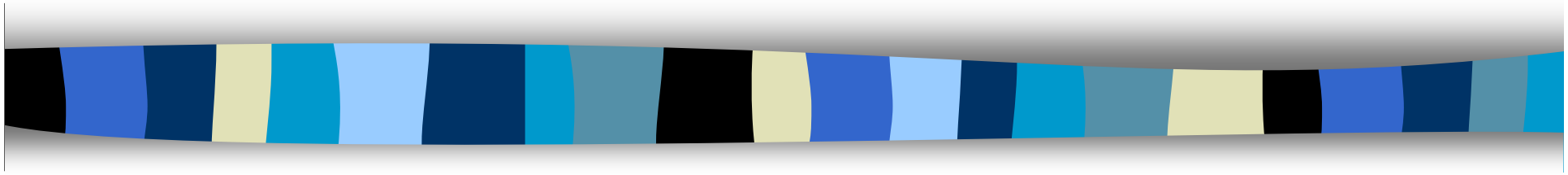
Level of Service and Caltrans



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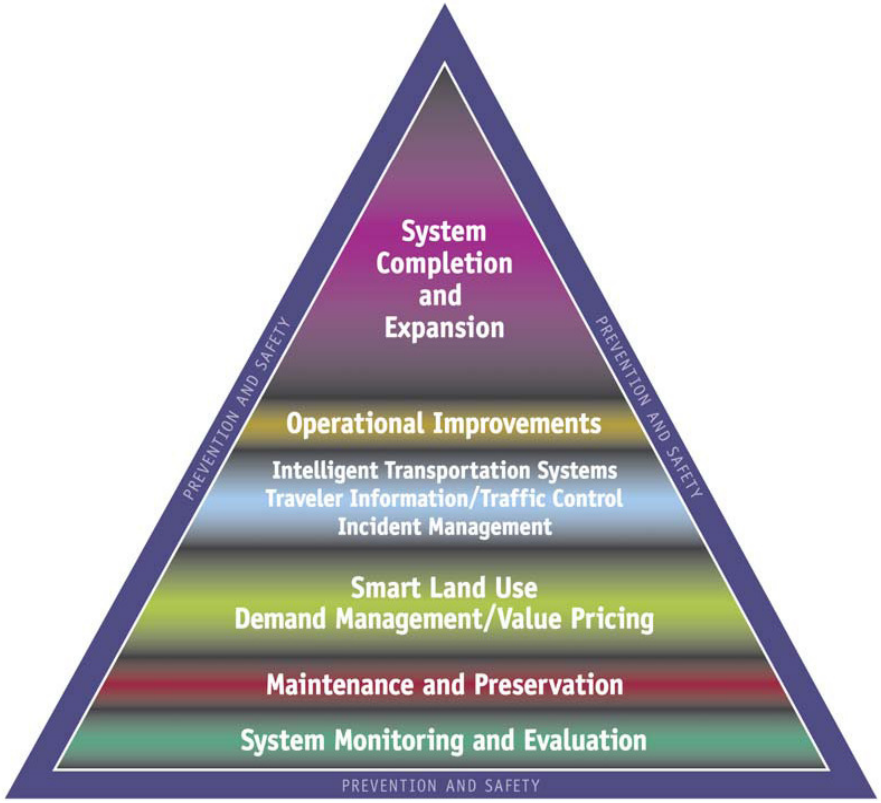
Caltrans' Mission

Caltrans Improves Mobility Across California



Caltrans' LOS Definition

Level of Service (LOS) is a qualitative measure of operating conditions within a traffic stream, and their perception by motorists and/or passengers. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety.

(www.dot.ca.gov/dist11/news/brawley/appendix/APPENDIXK.pdf)

LOS Chart: Mainline

LEVELS OF SERVICE
for Multi-Lane Highways

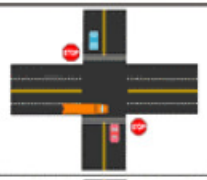
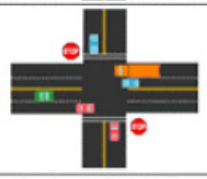
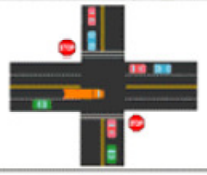
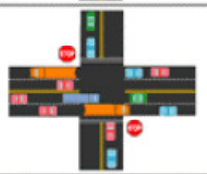
Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		60	Highest level of service. Traffic flows freely with little or no restrictions on maneuverability. **No delays**
B		60	Traffic flows freely, but drivers have slightly less freedom to maneuver. **No delays**
C		60	Density becomes noticeable with ability to maneuver limited by other vehicles. **Minimal delays**
D		57	Speed and ability to maneuver is severely restricted by increasing density of vehicles. **Minimal delays**
E		55	Unstable traffic flow. Speeds vary greatly and are unpredictable. **Minimal delays**
F		<55	Traffic flow is unstable, with brief periods of movement followed by forced stops. **Significant delays**

Source: 2000 HCM, Exhibit 21-3, Speed-Flow Curves with LOS Criteria for Multi-Lane Highways

LOS Chart: Intersection

LEVELS OF SERVICE

for Two-Way Stop Intersections

Level of Service	Flow Conditions	Delay per Vehicle (seconds)	Technical Descriptions
A		≤10	Very short delays
B		11-15	Short delays
C		16-25	Minimal delays
D		26-35	Minimal delays
E		36-50	Significant delays
F		>50	Considerable delays

Source: 2000 HCM, Exhibit 17-2, Level of Service Criteria for TWSC Intersections

How Caltrans Uses LOS

- A performance measure for highways
- Vehicle speed and facility congestion
- LOS is used in System Planning, Project Development Documents, and Intergovernmental Review

System Planning

- 20-Year Transportation Concept Report (TCR) - One for every route in each district
- Corridor System Management Plan (CSMP)
- Concept LOS (20-year)

Project Studies

- Project Initiation Document – Traffic data such as LOS must be analyzed
- Project Report - Existing and expected levels of service are to be outlined, and then compared to the minimum standards
- LOS is one factor of many this is used to determine the preferred alternative

Intergovernmental Review

- Traffic Impact Studies (TIS) assess development's impact on highways and LOS
- The number of generated trips and the existing LOS are factors used to determine when a TIS is required
- LOS is used to determine mitigation measures (nexus and proportionality)

Multimodal LOS Research

- NCHRP Report 616 – Multimodal LOS on Urban Streets
- Pedestrian, transit, bicycle, and auto LOS
- Perception-based measurements
- Expected to be incorporated into 2010 Highway Capacity Manual (HCM) update

Complete Streets & Smart Mobility

- Deputy Directive (DD) 64 R1 - Complete Streets
  - Signed in October 2008
  - Initial DD 64 focused on non-motorized transportation
- Smart Mobility Framework
  - A framework of evaluation tools will be provided to develop infrastructure consistent with smart mobility principles
  - Expected completion in early 2010

Guidance Update

- Update Caltrans' guidance documents to better integrate multimodal elements – transit, bicycles, and pedestrians
- Traffic Analysis Report Guidelines
- Traffic Impact Study Guidelines

Research Projects

- **Multimodal Infill Effects (Multimodal Trip Generation Rates)** – Division of Research and Innovation (DRI) Project
- **BRT Performance Measures (including Person Throughput)** - DRI Project
- **Cost Benefit Analysis of Converting a Lane for BRT** – NCHRP Project
- **Transit Performance Measurement Systems (T-PeMS)** – Berkeley Transportation Systems – SanDAG Project

Questions?

Thank You!